1 METHOD OF OPERATION 2 HAIVING FRANDIBLE OR TUSIBLE PART OR CONNECTION 3 ACTUATION DIRECTLY RESPONSIVE TO MAGNETIC OR ELECTRICAL EFFECT 4 ROTARY SKIN FRICTION TYPE (E.G., MAGNUS ROTOR, ETC.) 5 WITH ILLUMINATION MEANS 6 DRIVEN BY PULLARING OR DIVERSE MORKING FLUID 7 WORKING MEMBER SUPPORTED ON ENDLESS FLEXIBLE CARRIER 8 .Feathering blades 9 WITH MEANS POSITIONING FLUID CURRENT DRIVEN IMPELLER RELATIVE TO FLOW DIRECTION 10 .Offset relative to flow direction 11 .Upstream pivotal mounting 12 .Responsive to folding or feathering of flow-aligned vane 13 .Horizontal deflection relative to flow-aligned vane 14With impeller brake or stop vane 15And responsive to transverse vane 16Biased to position by weight of parts 17 .Feathering cycle related to flow direction 18 WITH GYROSCOPIC REFERENCE MEANS FOR ROTOR CONTROL 18 WITH GYROSCOPIC REFERENCE MEANS FOR ROTOR CONTROL 18 WITH GYROSCOPIC REFERENCE MEANS FOR ROTOR CONTROL 19 SINGLE BLADE ROTARY IMPELLER WITH COUNTERBALANCE 10 A.Atticulated or flexible commection 21 .Air-ingestion rotor tip unit DOMENING MEMBER 22 .Air-ingestion rotor tip unit DOMENING MEMBER 23 .Control of drive brake or clutch DOMENING MEMBER 24Air-ingestion rotor tip unit DOMENING MEMBER 25 .Tremperature responsive control .Drive engine intake air responsive to NON-CYCLIC CONDITION SENSING, CERTIFURAL ACTUATION, TORQUE OR THRUST CONDUSTION MEMBER 32 .Control of drive brake or clutch preset datum related control .Synchronizing .	_		27	.Pitch adjustment and throttle
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WORKING MEMBER SUPPORTED ON ENDLESS FLEXIBLE CARRIER 8	6	DRIVEN BY PULSATING OR DIVERSE	31	
## RENDLESS FLEXIBLE CARRIER 32		WORKING FLUID		
## SENDLESS FLEXIBLE CARRIER Feathering blades 32 Control of drive brake or clutch	7	WORKING MEMBER SUPPORTED ON		
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16		vane	2.0	-
17	16	Biased to position by weight	39	
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26 .Pitch adjustment related to drive brake or clutch guided or lineal pathCentrifugal mass coaxial with	25	INTERRELATED CONTROLS FOR		
drive brake or clutch 52Centrifugal mass coaxial with			JΤ	
drive brake or crucch	26		5.2	
operation			IJΔ	
		operation		Turbetter

53	Pivot axis parallel to rotation axis	84	BUOYANT OR INFLATABLE WORKING MEMBER
54	OPERATED BY ART DEVICE	85	FLOAT SUPPORTED
55	.Vehicular device	86	.Buoyant hub or rim
56	.Runner supported rocking device	87	RADIALLY EXTENSIBLE OR
57	Inertial actuation		RETRACTIBLE ROTOR WORKING
58	Continuous impeller rotation		MEMBER
59	.Pivot supported swinging device	88	.Variable work surface or non-
60		00	rigid connection
60	.Integral with or directly	89	.Having pitch adjustment
	attached to rotary device or	90 R	WITH FLUID PASSAGE IN WORKING
	part (e.g., flywheel, pulley,	90 K	
<i>c</i> 1	etc.)		MEMBER COMMUNICATING WITH
61	WITH MEASURING, TESTING,	0.1	WORKING FLUID
	SIGNALLING OR INSPECTION MEANS	91	.Both inlet and outlet to working
62	REMOVABLE AUXILIARY ATTACHMENT TO		fluid
	WORK SURFACE	92	.Discharge solely at periphery
63	AMBULANT, BODY SUPPORTED OR WITH		normal to rotation axis
	CARRYING HANDLE	90 A	.Air and watercraft propellers
64	TRANSLATORY REACTION MOTION	93 R	AMBIENT FLUID OR EXHAUST GAS
65	.And concurrent rotary reaction		DIRECTED THROUGH HUB, FAIRING
	motion		OR HOUSING
66	.Flexible or relatively movable	94	.Aircraft spinner or cowling
	working member or part	93 A	.Water or marine propellers
67	Valve type	95	WITH HEATING, COOLING OR THERMAL
68	Complemental pivoted surfaces		INSULATION MEANS
69	OPERATOR SUPPORTED MANUALLY	96 R	.Changing state mass within or
0,5	ACTUATED TYPE	20 11	fluid flow through working
70 R			member or carrier
70 K	Operation solely by direct hand	97 R	Flow exhausted to working fluid
7 1	manipulation	97 A	
71	Simulation or having indicia,		Laminated or porous skin
	ornamentation or combined	96 A	Blade inserts
5 0	feature	98	SUSTAINED ANCILLARY MOVEMENT OF
72	Relatively movable portions		ROTARY WORKING MEMBER (E.G.,
73	Arcuate planar folding of		CYCLIC FEATHERING, ETC.)
	working surface	99	.Intermounted rotary members
70 A	Fans	100	.Continuous rotor oscillation
74	.Fulcrum support type (e.g., oar,	101	.Cyclic radial movement
	scull, etc.)	102	.Responsive to carrier tilt
75	.Reciprocatory pin-slot actuator	103	.Lead-lag type rotor blade
76	.Rotary hand crank (e.g., egg		movement
	beater, etc.)	104	And additional correlated blade
77	Intermeshing or interdigitated		movement (e.g., pitch change,
	working members		etc.)
78	CRANK TYPE DIPPING OR STIRRING	105	Positive means effecting lead-
	MOTION		lag movement
79	OSCILLATORY REACTION MOTION	106	With movement restraining means
80	.With pendulum, counterbalance or		(i.e., damping)
	inertial weight	107	Resilient bias or limit stop
81	.Flexible working member	108	.By actuator eccentric to
82	Relatively movable working		rotation axis
02	member portions	109	Stationary eccentric guide or
83	.Compound motion (e.g.,	_0,	track
0.5		110	.Continuous rotation about plural
	feathering, undulating, etc.)	110	axes
			anco

111	Motion about parallel axes	145	.Self-shifting or selectively
112	.Responsive to fixed actuator		adjustable mass
	(e.g., cam or trip, etc.)	146 R	
113	Axial cam	146 A	
114	Selectively adjustable	147	HAVING POSITIVE MEANS FOR
115	Plural impellers		IMPELLER ADJUSTMENT
116	Stationary cam track or guide	148	.Tiltable carrier (e.g., hub,
	surface		etc.)
117	.Responsive to gravity or working	149	.Shiftable carrier support
	fluid force	150	Rectilinear motion
118	Having manual control or adjustment	151	.Power derived from impeller shaft
119	Motion about parallel axes	152	By brake application or release
120	PLURAL IMPELLERS HAVING RELATIVE	153	.Having pitch lock or adjustable
	MOVEMENT OR INDEPENDENT		stop
	SUPPORTS	154	Fluid motor for impeller
121	.Shiftable support		adjustment
122	.Intersecting or interdigitated	155	.Motor bodily rotatable with
	paths of operation		impeller hub or shaft
123	.Divergent rotation axes	156	Fluid motor
124	.Coaxial rotation	157 R	Coaxial with impeller shaft
125	Individual prime mover	157 A	Rotary fluid motor
126	Concentric working members	157 в	Plural blade units
127	Concurrent adjustment	158	Working member mounted or
128	Oppositely rotating impellers		housed
129	Engine driven	159	.Power or manual actuator on non-
130	.Differential or independent		rotatable part
	adjustment	160	Planetary gearing connecting
131	ARTICULATED, RESILIENTLY MOUNTED		rotatable and non-rotatable
	OR SELF-SHIFTING IMPELLER OR		parts
	WORKING MEMBER	161	Axially movable impeller
132 R	.Sectional, staged or nonrigid	162	Having motor
	working member	163	Adjustment rod through entire
132 A	Flexible sheet or plate		impeller shaft
132 B	Windmills	164	Reciprocating sleeve or collar
133	.Axially displaceable rotary		on or rod in impeller shaft
	<pre>carrier (e.g., hub, etc.)</pre>	165	Reciprocated by coaxial screw
134 R	.Nonmetallic resilient mounting	166	Rack-pinion connection to
134 A	Aircraft rotors		working member
135	.Resilient bias or mount	167	Pin-slot or cam-slot
136	Rotary working member pivotable		connection to working member
	solely about radial axis	168 R	Link connection to working
137	Convolute spring coaxial with		member
	impeller shaft	168 A	
138	With manual control means	169 R	
139	.Including weight bias means	169 A	3
140	.Including movement limit stop or damping means	170 R	SPECIFIC DRIVE OR TRANSMISSION MEANS
141	.Plural articulation	171	.Impeller driven by fluid motor
142	WORKING MEMBER FOLDABLE,	172	.Alternating rotation
	PIVOTABLE OR COLLAPSIBLE TO	173	.Manual powered means
	NON-USE POSITION	170 H	
143	.Member movement in rotation plane		
144	WITH WEIGHT-BALANCING MEANS		
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174	HAVING LUBRICATING, SEALING,	197 R	CUPPED REACTION SURFACE NORMAL TO
	PACKING OR SPECIFIC BEARING	107 7	ROTATION PLANE
	MEANS BETWEEN IMPELLER OR SHAFT AND STATIC PART	197 A	<pre>.Air and water motors (natural fluid current)</pre>
175	DIVERSE IMPELLERS OR WORKING	197 В	.Pelton wheels (impulse wheels)
	MEMBERS	197 C	.Torque converters
176	SPIRAL BLADE OR FLOW PASSAGE (360 DEGREE)	198 R	MULTIPLE AXIALLY SPACED WORKING MEMBERS
177	.Flow confining casing, shroud or	199	Opposed axial flow
± / /	passage	200 R	.Circumferentially offset
178	PERIMETRIC BLADING EXTENDING	200 R 200 A	Turbo machine
1,0	AXIALLY BETWEEN ANNULAR	200 A 201 R	Turbo machine .Differing radii
	MEMBERS (E.G., SQUIRREL CAGE	201 A	Non-turbo machine
	TYPE, ETC.)	198 A	Non-curbo machine .Turbo machine
179	ROTOR HAVING FLOW CONFINING OR	196 A 202	PROJECTING BLADE AXIS OFFSET FROM
	DEFLECTING WEB, SHROUD OR	202	ROTATION AXIS
	CONTINUOUS PASSAGE	203	UNSYMMETRICAL IMPELLER OR
180	.Blades projecting axially from	203	DISSIMILAR WORKING MEMBERS
	concavo-convex annular web	204 R	SPECIFIC WORKING MEMBER MOUNT
181	.Apertured or foraminous web or	205	.Adjustable
	shroud	206	Spring biased detent
182	.Radially extending web or end	207	Blade releasably clamped
	plate	208	Split impeller hub
183	Circumferentially or radially	209	Thimble or sleeve fixed on
	angulated or discontinuous	200	impeller blade
	blades or sections (e.g.,	210 R	.Distally supported on radial arm
	stepped, etc.)	211	Axially extending blade
184	Spaced intermediate ends of	210 A	Turbo machine
	opposed axial flow impeller	212 R	.Interlocking blades
185	Circumferentially and radially	212 A	Turbo machine
106 -	continuous web or end plate	213 R	.Welded, cemented or fused
186 R	Having opposed annular surface	213 A	Non-turbo machine
107	between adjacent blades	214 R	.Blade held between separable
187	Angularly spaced, axially		surfaces
	elongated blades (i.e.,	214 A	Turbo machine
186 A	squirrel cage type)Adjustable blade or part	215	.Blade received by continuous
188 A	Conical web		circumferential channel
189	confical web .Axially extending shroud ring or	216	Radially spaced ribs or grooves
109	casing	217	Divided blade root
190	Vibration inhibiting or	218	Having circumferentially
100	expansion-contraction		extending binder
	structure	219 R	.Blade received in well or slot
191	Segmental shroud	220 R	Having blade locking means
192	Having radial flange	221	Resilient or deformable
193 R	Spaced inwardly of impeller	220 A	Non-turbo machine
	periphery	219 A	Non-turbo machine
193 A	Root platforms	222	.Blade straddles carrier
194	LASHING BETWEEN WORKING MEMBERS	204 A	.Turbo machine
	OR EXTERNAL BRACING	223 R	SPECIFIC BLADE STRUCTURE (E.G.,
195	.Peripheral		SHAPE, MATERIAL, ETC.)
196 R	.Connecting adjacent work surfaces	224	.Having wear liner, sheathing or insert
196 A	Non-turbo machine (windmills)	225	.Having spanwise compression
1)U A	Non-curbo machine (windmills)		means

226		.Formed with main spar			
227	R	<pre>.Openwork (e.g., lattice, looped, etc.)</pre>	FORE	EIGN	ART COLLECTIONS
227	A	Propeller and non-mixers	FOR		CLASS-RELATED FOREIGN DOCUMENTS
228		.Tined or irregular periphery	_		
229	R	.Laminated, embedded member or			
		encased material			
230		Wire, fiber, strand or fabric	DIGE	ESTS	
229	A	Turbo machine			
231	R	.Apertured or permeable	DIG	1	STALKER
231	A	Mixers or agitators	DIG		FORMULAS OF CURVES, ETC.
231	В	Slotted blade	DIG		SHEET METAL
232		.Hollow	DIG	4	FLUID CURRENT MOTOR AND GENERATOR
233		Having brace means bridging	DIG	5	VARIABLE CAMBER OR CHORD LENGTH
		cavity	DIG	6	SUPPORTS FOR NATURAL FLUID
234		.Integrally shaped or blended			CURRENT MOTORS
		into hub	DIG	7	INLET AND OUTLET
235		.Irregular, flanged or channel	DIG	8	STACK OR CHIMNEY WITH FLUID MOTOR
006	_	forming blade surface	DIG	9	SAVONIUS
236		Ribbed or grooved			
236		Concentric or circular ribs			
237		Angular or offset			
238 239		.Cantilever blade			
240		.Blade cuff or shank construction .Flexible			
241	D	.Coating, specific composition or			
241	K	characteristic			
241		Plastic or synthetic material			
241		Ceramic material			
242		.Reverse curve surface			
243		.Concave surface			
223		.Turbo machine			
223		.Radial flow devices			
244	R	SUPPORT MOUNTING, CARRIER OR			
0.45	_	FAIRING STRUCTURE			
245		.Spinner or fairwater cap			
245	А	Water or marine propellers			
246		.Selectively adjustable impeller mount			
244		.Turbo machine			
244		.Water or marine propellers			
247		PROTECTIVE SCREEN OR GUARD			
247	A	.Water or marine propellers			
248		MISCELLANEOUS (E.G., BLADE ROOT			
		OR ROOT BLOCK, ETC.)			

CROSS-REFERENCE ART COLLECTIONS

500	VIBE	RATION	DAMP1	NG	FEATURES
501	FLY	BRUSH	TYPE	IME	PELLER